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have more or less responsibility resting upon them for whatever may be properly criticized in the governmental scientific corps. Efforts the corps itself may make for betterment are liable to the charge of self interest. The "outsiders" can help, if they will, to promote the ideal service. For such help no one will be more grateful than the members of the corps concerned.

A long dissertation illustrative of the statements above made might easily be written, but space requirements forbid it here.

In conclusion the writer is confident that neither in this country nor elsewhere is to be found a body of men of science more devoted to their work, more self-sacrificing in their devotion to it, and with a more honorable record, than the scientific corps of the government service, however, in the human way, it may fall short of the ideal.

WASHINGTONIAN

"BIOLOGY"

TO THE EDITOR OF SCIENCE: The publication in SCIENCE, of September 8, 1911, of a request that you "refuse to print any communication in which the adjective 'due' appears in any way except as agreeing . . . with some noun or pronoun" leads me to refer to the advertisement on page 1, of the same number, which gives, under six heads, a list of educational books for sale, one of the heads, "Biology," listing texts on "Laboratory Zoology," "Mammalian Anatomy" and "Zoology"; another head is "Botany," listing a "Guide to Laboratory and Field Studies," "Plant Anatomy" and "Vegetable Physiology."

After we have decided what the difference is between water-vapor and steam, and why the ether can not be made of electrons, will you please allow space for replies to the following question: What is there more "biological" about laboratory zoology than about laboratory and field studies in botany, about mammalian anatomy than about plant anatomy, or about a text-book on zoology than one on vegetable physiology?

Will not SCIENCE hereafter please refuse to

publish any communication or advertisement in which the word biology is used as synonymous with zoology? Zoological journals please copy!

C. STUART GAGER

BROOKLYN BOTANIC GARDEN,
September 11, 1911

HOUSE AIR

TO THE EDITOR OF SCIENCE: Before the last echoes of the discussion as to indoor and outdoor air, humidity and so on die away I should like to add a word as to the general neglect on the part of doctors and nurses to look carefully into the nature of the air supply. There is an increasing tendency to prescribe life out of doors, even in bad weather, as almost a specific for many pathological conditions, from incipient tuberculosis to weak heart action. But after all, most sick people are indoors during the greater part of the twenty-four hours, at most seasons of the year. And yet it is rare indeed to find even an exceptionally intelligent physician who knows in detail at what rate the air of the patient's room is being changed, what is its origin, or its relative humidity. Physicians rather commonly and nurses almost always ignore the difference in ventilating effect between furnace or indirect steam heating and hot water or steam pipes in the rooms of the house. I have heard an unusually intelligent nurse, a woman with years of thorough training in her calling, argue for a half hour that no change of air could be accomplished by an open furnace register—she doubted whether any air came into the room from that source at any time.

As a matter of fact the ventilation from a register of ordinary size (say $9\frac{1}{2} \times 15\frac{1}{2}$ inches) in freezing weather, with a reasonable fire in the furnace, is much better than can ever be obtained in summer by opening a single window to its full height. There is no other simple way of securing cold weather ventilation in ordinary houses so certain to act efficiently as heating with a furnace provided with a capacious cold air duct. Still

this source of air supply leaves much to be desired on the score of quality. Much street dust may enter the cold air box and be distributed throughout the house. And few realize the parching quality of the air in furnace heated houses. I have found the air in a house heated by a good furnace in moderately freezing winter weather in Massachusetts with a relative humidity as low as 16 per cent. This, too, was with the water reservoir of the furnace well filled. Such air is far dryer than that of an oasis of the Sahara in the driest season of the year and it irritates the skin and mucous membrane and carries off moisture so rapidly in insensible perspiration as to make it necessary to maintain the room temperature at a point several degrees higher than would otherwise be demanded.

Furnace heating may be made to furnish much better air for breathing by straining the air, either by means of a thin layer of cotton batting at the entrance of the cold air box or by a layer of the silk-like glass fiber, used for jacketing steam pipes and so on, under each register. The humidity may be considerably increased by supplying boiling water to the evaporating reservoir in the furnace. In single rooms it may be raised by keeping a large coarse towel, frequently wrung out, hung from any convenient support immediately over the register. Where there is a combination of steam and furnace heating, the hot air may be moistened to any desired extent by letting a very minute steam jet enter the heated air inside the outer jacket of the furnace.

Whatever the nature of the heating apparatus employed, the householder of inquiring mind will find a good deal of food for reflection in the results obtained by burning touch-paper just over the registers or radiators which serve as the source of heat and watching the distribution of the heated air and by measuring the relative humidity of the air in some living rooms in cold weather, by means of a sling psychrometer. The values corresponding to the readings of the wet bulb and dry bulb thermometer can be obtained by in-

spection of the "Psychrometrical Tables" published by the U. S. Department of Agriculture, Weather Bureau.

J. Y. BERGEN

CAMBRIDGE, MASS.

ELEMENTARY TEXT-BOOKS IN CHEMISTRY

TO THE EDITOR OF SCIENCE: Professor Miller in his address given at Indianapolis and published in No. 870 of SCIENCE criticizes in some important particulars the current elementary text-books in chemistry. Personally I would have been better pleased with the excellent and timely address if he had said "many text-books," or "most text-books," instead of "our text-books." It should also be said that an elementary book ought rather to be conservative than radical, as long as the conservative position has a considerable following among leading chemists.

The particular criticisms offered by Professor Miller suggest the general subject and lead me to speak of one or two others, which I confess do not apply to all elementary texts. Passing by criticisms that are often made—as that many books are too learned and heavy in style, that they make too much of chemical theory and do not show respect enough for chemical fact, etc.—I want to say a word concerning the immense field that the usual book presents to the high school student, to be completed in one year. I do not refer to the size of the book but the amount of matter. Some of the smaller books sin worst in this regard, being little more than a synopsis of a good college book. I know how much can be said in favor of a complete view of an important subject of study, and how much about the vital character of any particular suggested omission, but there is one sort of reduction that might easily be secured. This large field has grown of recent years partly by annexing outlying territory that was formerly regarded as belonging to other subjects of study. Many elementary books are written fully in the spirit of a sentence which I quote from a recent address on chemistry: "Physics, geology, engineering, physiology, botany, zoology and